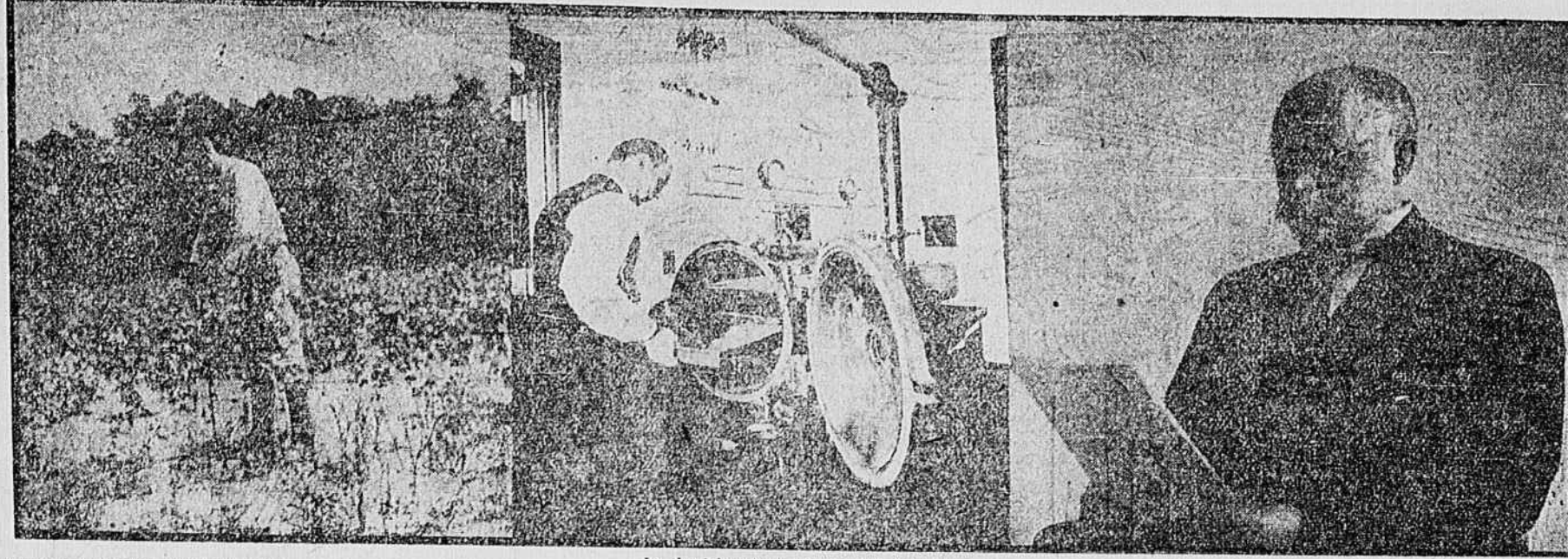


Government's Big Soil Survey--How Uncle Sam is Waffing the Country for Investor and Farmer--Medicine for Sick Lands



TESTING UNITED STATES WITH AUGURS.

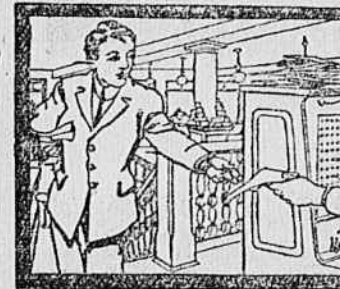
BY FRANK G. CARPENTER.

Washington, D. C.
I write to-day of the most stupendous undertaking that Uncle Sam has ever attempted. It is the making of an inventory of our working lands for the government's use. I refer to the government survey of our soils. Our eyes bulge when we think of our enormous resources in mines, of the gold, silver, copper and coal and the mighty bed of iron which keep our industries moving. Nevertheless they are nothing compared with our receipts from the soil. Take all the wheat, all the corn and cotton that the world produces in one year, and its value would not be half that of our corn crop. All the gold dug out of the earth in 1910 would not buy half the cotton we shall raise this year, and it would take twenty times the gold to produce the wheat to pay for what we are annually receiving from the farms. The amount is close to 2,000 million dollars. Since discovery of America the total value of the precious metals which have been mined aggregates less than 17,000 million dollars. The value of the crops like that of last year would equal all the gold and silver taken out of this big round earth since the Spaniards led by Columbus came across the Atlantic to begin their robbery of the Aztecs and the Incas. That was four hundred and nineteen years ago, and since that the whole world has been digging and delving to get out that silver and gold. Within the last thirteen years our little army of farmers has taken from the earth crops which are worth more than \$1 billion dollars, or three times the product of the gold and silver mines from more than four hundred years.

Big Things From the Soil.

Before I describe this survey let me say a word more as to some of the crops we get from the soil. The corn crop of the United States is the largest in the world. It amounted last year to three billion bushels, and is worth more than fifteen hundred million dollars. Nevertheless, it was dug from the ground in a little less than 100 days and the government experts tell us that if the crop is rightly handled, it can be doubled. That crop comes from a comparatively small area. Within the last decade the most of it was raised in the North. Last year almost 1,000,000,000 bushels came from the South and that had a value of close to \$300,000,000. It was created because the South had begun to learn more about the soil, and it is the beginning of an enormous wealth which further knowledge will bring.

The Cotton Crop Brought in an Aggregate of something like \$2,000,000,000, and that notwithstanding the weeds, which, since its coming, would have wiped more than half of our cotton plantations from the face of the earth. And then there is the hay crop, amounting to 50,000,000 tons and worth more than \$100,000,000; the wheat crop which was almost as valuable and our oats which extended 3,000,000 bushels, to say nothing of potatoes, sugar, tobacco and barley, each of which ran high into the millions. All this comes from the soil and the product depends on just what the soil is. The agricultural experts say that in large cases out of ten every crop can be largely increased, provided the right crop is chosen for the right place and the cultivation proper.



Stimulates the Trade

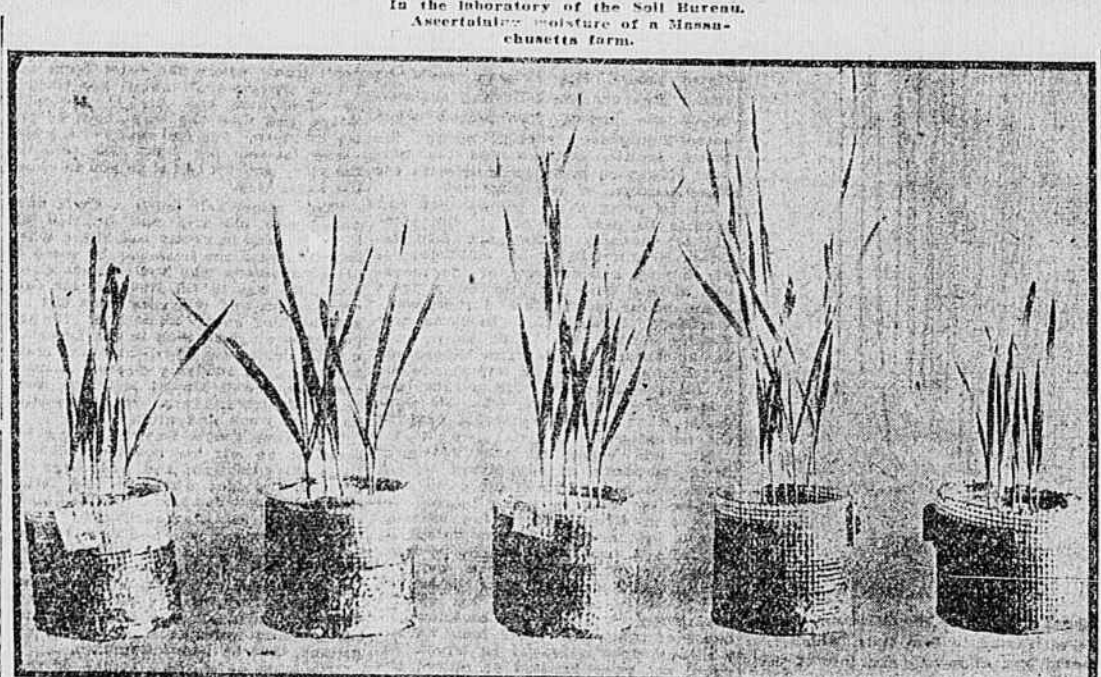
BIG STORES and little stores are catering to the telephone trade. Goods may be ordered by Bell Telephone locally or in distant cities with equal satisfaction.

The Universal Long Distance Bell Telephone System insures prompt and efficient service for the dweller in the suburbs or in distant towns. Many store Managers offer inducements for orders by Long Distance Telephone. It increases business and saves time and trouble.

The door of every store within a radius of a thousand miles is open to the shopper by Bell Telephone.

By the way, have you a Bell Telephone?

SOUTHERN BELL TELEPHONE & TELEGRAPH CO. OF VIRGINIA



Medicine for sick soils. Soils of baskets 2 and 3 have been dosed, but not fertilized. No. 1 stands in original soil. 4 and 5 have had fertilizer.

Testing the United States With Augurs.

But what a mighty job it is. Think of going over the United States with an augur, an inch and a half in diameter and three feet in length, and boring down into every ten-acre field to find out what kind of soil it contains. That is what Uncle Sam is doing. He has already tested the most of the land of the great plains, and has actually made soil maps and working plans for a territory larger than France, Germany or the Spanish peninsula. He has mapped and analyzed the soils of considerable areas in the West, and has been carrying on in other sections, and there are on file requests for 500 and more additional surveys, covering about one-fifth of our country.

What Soil Is.

It makes one's head buzz when he thinks of these big scientific features of Uncle Sam's work. They are hard to describe in popular language, and the scientists use terms which would frighten the reader. I have been talking with many of the soil experts, and among others with Dr. Milton Whitney, who has been at the head of the bureau since its beginning, and who knows more about soils, perhaps, than any other man in the country.

In the first place, what is soil?

It is the thin skin which incloses the body of the Mother Earth, formed of the dust of the old land's scourgings. We all know that it is disintegrated rock, but the experts say that the rock alone is not soil, and that it must have humus or some vegetable or organic matter mixed with it to make the crops grow. It must have water and air and also the myriads of the little devils of a vegetable sort known as bacteria.

All rock is mineral, and the soil is made up of minerals washed from the rocks by the rains and loosened by other agencies so that it may furnish the food for the plants. In order that it may do this it must consist of particles which are infinitesimally small. Many grains of the soil are so little that you cannot see them except when some millions are collected together. Take the Norfolk sand, which covers the eastern coast of the United States from Florida to Long Island. That is good vegetable ground, but a great part of it is so fine that a child's thumb will hold more of its particles than there are men, women and children in this whole world. It measures about two billions to the gram, and that many can be inclosed in a cylinder one-fourth of an inch in diameter and half an inch long.

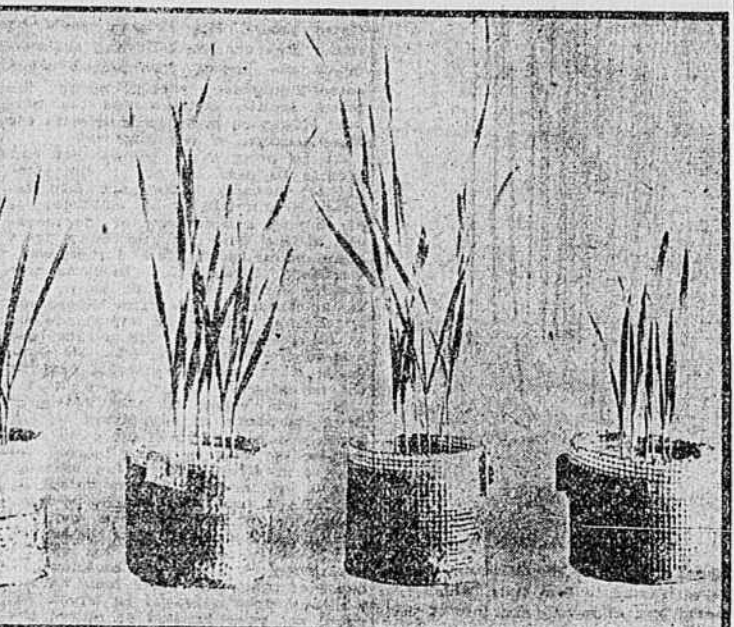
There are other soils which have even more particles than this, and it is said that the best wheat lands and grass lands are so fine that from ten to fourteen billion separate particles or grains may be crowded into a thimble.

These particles are usually roundish in shape. They are separated by air spaces, and a single cubic foot of soil is said to expose to the roots of the plants an area of surface equal to three acres. That is, each particle can be reached on all sides, and the aggregate surface of these billions of particles equals three acres. It is according to the division of the particles and the character of their contents, as well as according to the way they have been laid down, that we know what our soils are.

How the United States Was Made.

Dr. Whitney could tell you just about how the United States was made. He knows where the soils came from and how they were laid down upon the rocky surfaces of the globe. I have before me a map made by his bureau which shows our great soil provinces. It is in many colors, each of which describes the land of its location. In the first place there are the soils which have been washed down from the mountains. This is disintegrated rock, which has rolled over and over, in these

In the laboratory of the Soil Bureau. Ascertaining the texture of a Massachusetts farm.



DR. MILTON WHITNEY, United States Government Soil Surveyor.

countless billions of grains, until it has built up the land on the edge of the sea. We have a great strip of that kind of soil running along the Gulf of Mexico and on the Atlantic coast as far north as the edge of New England. This is excellent land for farming and vegetables.

It raises corn and all sorts of crops in the South; in Florida it makes cotton and gives us the fruits of the tropics. Of this about thirty-three million acres have been already surveyed.

Just back of this region, lying east of the Appalachian Mountains, is what is known as the Piedmont Plateau, another great strip of soil. This is made of a different rock and is so situated that the rock has disintegrated or rolled and lies where it went to pieces. These soils have a special character of their own, and they need special treatment.

The Loess of the United States.

Still further west is the Appalachian region, which, as far as I can understand, is of less value than most other soils, and to the north and west of it, comprising the Upper Mississippi Valley and the most of the land about the Great Lakes, are what are known as the glacial and loessial soils. These comprise a large part of the corn belt, and are of great value to the United States, and they are exceedingly rich.

You may have read of the great loess region of China. It consists of a mighty plateau of clay made up of particles as fine as the finest dust. Over this the winds are constantly blowing, and through it some great rivers run. The winds have carried the dust all over Central and Eastern China, and have built up there the richest lands of the world. The Yangtze Kiang and the Hoang Ho carry down many billions of tons of this dirt every year, and that also goes to build up the land. In the same way this Upper Mississippi Valley and the remainder of the great loessian province of the United States, comprising lands bordering the Great Lakes, is overlaid with windblown dust from the Rocky Mountains, and it is out of

the dust that we get the wheat, corn and meat which form our chief food supply.

Made by the Glaciers.

The greatest part of this wind-blown dust lies on a bed of rock which was ground up and brought down by the glaciers during the great ice ages of the past. There are places where the dust is not thick and where this glacial soil lies close to the surface. This also forms some of the best wheat and fruit lands. The Red River Valley is a part of it, and you may find it about Lakes Erie and Ontario, running up into New York, taking in Buffalo, Oswego and going on clear to the Canadian boundary. That land is excellent for fruits, and it is one of our best regions for the production of apples and grapes.

In addition to these soils we have those which form the banks of the rivers and the lowlands adjoining. They are scattered along the Missouri and Mississippi and the tributaries which flow into them. They come from the highlands nearby and are made of soils being usually more productive than the territory from which they have come. Of these about 13,000,000 acres have been surveyed.

And then there are other special patches, known as the limestone valleys, of which we have a few, tested between seven and eight million acres. Some of these are found under the blue grass of Kentucky, where they produce excellent horses and mules, and also cover a great part of Missouri, running south of that State into Arkansas. There is another class of soils in the Rocky Mountain basin, and some of all these soils are found on the Pacific slope.

The Bureau of Soils.

I wish I could take you through the Bureau of Soils and show you the people at work testing the earth which has been sent in from the fields. There are great laboratories which have bottles containing soils of every description and representing every part of the country. There are upward of 300 different soils in these bottles and the reports will tell just what the property of each is and what crops it will raise. You may learn the character of the earth. Some of it is coarse, gritty and sandy. Other soils are made of fine sandy loams. There are other divisions of soil, such as silts, clay loams and clay, so that one can know the texture of the soil and for what it is fitted. A description of the varieties and their characteristics is too long for this paper.

Soil Maps.

When this soil survey is completed every farmer in the United States can write to the government and learn all about the land he is working. He will be sent a map of his county which in some cases is as big as a tablecloth and so pictured in colors that he can tell in just what township each kind of soil is and can almost pick out his own farm.

In such surveys the work is exhaustively done. The experts, who are college-bred men, and who know all about the earth and its products, bore down into the ground to a depth of three feet and take up specimens of the soil and analyze them. In some cases they have an electrical apparatus which tells the presence of salts in the soil, and they use every means of getting accurate, up-to-date information.

The maps show the lay of the land, the streams, the roads and the chief market towns. They show you the climate and the temperature from month to month throughout the year. They take up each crop that is raised and tell how it should be handled to make it grow better. They describe the stock-raising possibilities, give the rates of farm wages, and everything, in short, that a farmer needs to know to settle in such a country should he know.

How the Surveys are Used.

This information is of great value to investors, for by it they can tell the possibility of the farmers paying their loans or the credit which should be given to the municipalities or to the towns. They are of advantage to the railroad who can use the information for the placing of immigrants, and to settlers and land buyers of every description. I understand that the railroads are already using them very extensively to attract the investments of the bureau of the heads for the building up of their traffic and of settling their lands.

Indeed, I feel unable to express the great value of the work which the Bureau of Soils is doing for the country. It not only tells us what our lands are, but how each kind should be treated that fertility may be increased. Among the work of its laboratories are recent discoveries in the renovation of soils. Dr. Whitney does not think that lands can wear out, and believes that good handling can restore the original forces of almost any soil upon earth. He says that lands in the Orient which have been farmed for twenty centuries are still producing good crops, and that the soil which was tilled when William the Conqueror came into England still keeps up the average wheat yield of that country to about thirty-

four bushels to the acre.

Medicine for Sick Lands.

One of the most interesting of the present investigations is that being made by Dr. Schreiner and others as to the deleterious matter which is found in some soils. This may be poisonous to the plants and may retard their growth, although the soil may have abundant plant food and all the other conditions which should produce the richest of crops.

In going through the laboratories I was shown plants which were being tested. In one glass a plant would be growing in the original soil, and in another it would be standing in the same earth with fertilizers added. In both these cases the plants would look alike and have but a small root development. In the third glass the same plant would be put in the same soil with an antidote to correct what the scientists believe to be a poisonous element of the soil, and in this last case the plant was luxuriant with great roots, showing that it was the poison and not the lack of plant food that kept it from growing. This, Dr. Schreiner tells me, is the case with a great many of the farms of our country. They need medicine to take the bad stuff out of their system, just as you and I need liver pills in the spring, and in some of these cases time makes a good antidote or corrective, and for others different medicines are required. (Copyright, 1911, by Frank G. Carpenter.)

Wytheville Social News.

(Special to The Times-Dispatch.)
Wytheville, Va., September 30.—Cards have been received in Wytheville, Va., from the marriage of Miss Margaret Hays, of Nashville, Tenn., and Ferdinand Powell, of this place, the marriage to take place at "Midway," the home of the bride, on Tuesday evening, October 10.

One of the most enjoyable entertainments of the week, was a reception given by Mrs. A. P. Davis, in honor of her house guest, Miss Esther Messers, of Front Royal.

Mrs. Williamson McGavock and Miss Emily McGavock are guests of Edmund Pendleton.

The Rt. Rev. and Mrs. Reese and Miss Louise Reese, returned to Savannah Thursday, after a visit to Rev.

Buena Vista Social News.

(Special to The Times-Dispatch.)
Buena Vista, Va., September 30.—W. F. Burks, who has been spending some time in Covington, has returned to the city.

Misses Grace and Rubenette Lee, of Irvington, and Miss Grace Jean Salls, of Oxford, N. C., have returned to the city for the winter.

Mrs. E. F. Burks, of Sherwood, and Mrs. L. M. Campbell, of Colorado, are the guests of Mrs. H. L. Kennedy.

Miss Emma Booker, of Hampton, is the guest of her sister, Mrs. A. C. Hopkins.

Rev. J. M. Wells, D. D., of Wilmington, N. C., is the guest of Mrs. D. R. Miller.

Mrs. and Mrs. Lewis Meriwether Walker, of Durham, are the guests of Mrs. J. M. Willis.

Mrs. J. F. Stratton is spending some time in Staunton.

Mrs. Fred White, of Norfolk, is the guest of her daughter, Mrs. T. J. Williams.

Dr. and Mrs. L. B. Whitehead spent the week in Chatham.

Miss Grace Bush, who has been spending a couple of weeks in Salem, returned home Wednesday.

Lewis Dawson and Lewis Jackson, of Salem, spent the week-end with J. E. Dawson.

THE BIG STORE

RYAN-SMITH & CO.

HOME OUTFITTERS

MASONIC TEMPLE

Prepare for State Fair Visitors

The Big Store will help you solve the problem of accommodating the guests who are sure to come next week. An extra bed, a couch or a folding cot will help out greatly, or perhaps you only need another mattress or some comforts and blankets. Whatever you require can best be supplied here, where stocks are largest, quality highest and prices lowest.

Alert Heaters

Brass and Iron Beds

Kindle Davenport Beds

Maish Comforts and Blankets

Mattresses

BRIDAL OUTFITS

Many New Designs In

Mahogany, Golden Oak, Circassian Walnut Bedroom Suites.

Mahogany, Early English, Golden Oak Dining Suites.

At Attractive Prices

Direct Action Gas Ranges, Hoosier Kitchen Cabinets

FRECKLES

New Drug That Quickly Removes These Homely Spots.

Bath Brushes

Something Classy—LEINER'S BATH BRUSHES (long handle), can be used either wet or dry, \$1.00 and \$1.25.

Bath Brushes, with straps and detachable handles, 75c, \$1.00, \$1.25, \$1.50.

T. A. MILLER CO.

Druggists, 519 E. Broad.

Mad. 3199. Hourly Deliveries.

THE BIG STORE
RYAN-SMITH & CO.
HOME OUTFITTERS
MASONIC TEMPLE

Prepare for State Fair Visitors

The Big Store will help you solve the problem of accommodating the guests who are sure to come next week. An extra bed, a couch or a folding cot will help out greatly, or perhaps you only need another mattress or some comforts and blankets. Whatever you require can best be supplied here, where stocks are largest, quality highest and prices lowest.

Alert Heaters

Brass and Iron Beds

Kindle Davenport Beds

Maish Comforts and Blankets

Mattresses

BRIDAL OUTFITS

Many New Designs In

Mahogany, Golden Oak, Circassian Walnut Bedroom Suites.

Mahogany, Early English, Golden Oak Dining Suites.

At Attractive Prices

Direct Action Gas Ranges, Hoosier Kitchen Cabinets

FRECKLES

New Drug That Quickly Removes These Homely Spots.

Bath Brushes

Something Classy—LEINER'S BATH BRUSHES (long handle), can be used either wet or dry, \$1.00 and \$1.25.

Bath Brushes, with straps and detachable handles, 75c, \$1.00, \$1.25, \$1.50.

T. A. MILLER CO.

Druggists, 519 E. Broad.

Mad. 3199. Hourly Deliveries.

THE BIG STORE

RYAN-SMITH & CO.

HOME OUTFITTERS

MASONIC TEMPLE

Prepare for State Fair Visitors

The Big Store will help you solve the problem of accommodating the guests who are sure to come next week. An extra bed, a couch or a folding cot will help out greatly, or perhaps you only need another mattress or some comforts and blankets. Whatever you require can best be supplied here, where stocks are largest, quality highest and prices lowest.

Alert Heaters

Brass and Iron Beds

Kindle Davenport Beds

Maish Comforts and Blankets

Mattresses

BRIDAL OUTFITS

Many New Designs In

Mahogany, Golden Oak, Circassian Walnut Bedroom Suites.

Mahogany, Early English, Golden Oak Dining Suites.

At Attractive Prices

Direct Action Gas Ranges, Hoosier Kitchen Cabinets

FRECKLES

New Drug That Quickly Removes These Homely Spots.

Bath Brushes

Something Classy—LEINER'S BATH BRUSHES (long handle), can be used either wet or dry, \$1.00 and \$1.25.

Bath Brushes, with straps and detachable handles, 75c, \$1.00, \$1.25, \$1.50.

T. A. MILLER CO.

Druggists, 519 E. Broad.

Mad. 3199. Hourly Deliveries.

THE BIG STORE

RYAN-SMITH & CO.

HOME OUTFITTERS

MASONIC TEMPLE

Prepare for State Fair Visitors